

Appl. No. : 10/770,739
Filed : February 3, 2004

REMARKS

With this amendment, Claims 1-21 are pending in the present application. Applicant has added Claims 17-21. In view of these amendments and the following remarks, Applicant respectfully submits that all of the claims of the above-identified application are in condition for allowance.

Claim Rejections – 35 U.S.C. § 102

The Examiner has rejected Claims 1-16 under 35 U.S.C. § 102(b) as being anticipated to U.S. Patent No. 5,425,986 to Guyette.

The Examiner asserts that Guyette discloses each and every limitation claimed in the present application. Applicant respectfully disagrees. Guyette does not disclose a laminate structure having a stress-relieving elastomer that acts as a stress relaxer between the cementitious substrate and the resin impregnated paper that allows movement there between. Rather, Guyette discloses a consolidated, unitary laminate structure comprising a core of fiber cementboard laminated to resin impregnated sheets. (see Guyette at 7:22-24.) While Guyette also provides for an *optional* adhesive between those two layers, and even contemplates that the adhesive be made of epoxy, the adhesive is not contemplated as being an elastomer. (see Guyette at 6:15-16; *Id.* at 6:66-68.) Instead, the adhesives disclosed in the Guyette reference provide for a rigid bond that cures into a rock-like form.

The embodiments of the present application are an improvement over the Guyette reference. The focus of the Guyette reference is on manufacturing a laminate structure in one step. (see Guyette at 1:44-46; 1:63-2:2.) Embodiments of the present application, on the other hand, are directed to maintaining the lamination of such structures even when those laminate structures encounter various environmental conditions. As discussed in the specification of this application, the laminate structure of Guyette, when used in the field, experiences differential dimensional movement of the core and the laminate. (see Specification at ¶ 6.) This differential movement leads to induced stresses between the cementitious core and the resin impregnated sheets which often leads to splitting of the core or delamination. (see Specification at ¶ 6.)

To overcome the problems associated with laminate structures, such as the one disclosed in Guyette, certain embodiments of the present application provide a stress-relieving elastomer between the cementitious core and the resin impregnated sheets. (see Specification at ¶¶ 20-21.) This elastomer successfully stops the delamination on laminated cementitious materials whether

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the product is made from direct or indirect lamination. (see Specification at ¶ 21.) This remains true even in environments where laminate structures experience high moisture followed by periods of dryness or heat and low humidity. Simply put, structures incorporating the claimed elastomer are less susceptible to delamination and/or splitting or cracking.

Conversely, structures without the specially selected claimed elastomer, such as the structures disclosed in Guyette, suffer from delamination. (see Specification at ¶ 20.) The simple reason is that prior laminate structures lack means for balancing the differential movement between the cementitious core and the laminated resin sheets. Under environmental conditions, such as heat and moisture, those laminated sheets have a much larger dimensional movement than the cementitious panel. (see Specification at ¶ 20.) As a result of the differential movement, the laminated sheets will delaminate from the cementitious core under dry conditions, high humidity or variations in temperature. (see Specification at ¶ 20.) Indeed, Applicant has found that the structure of Guyette will delaminate when placed in conditions where the claimed structure showed no delamination. (see Specification at ¶ 33.) Therefore, Guyette does not disclose, teach, or suggest means for relieving stress between the cementitious substrate and the resin impregnated papers, let alone the claimed elastomer. Accordingly, Applicant respectfully requests the Examiner to withdraw the rejection to Claims 1-16.

Guyette Does Not Disclose the Properties of the Stress-Relieving and Elastomeric Film

In rejecting the claims, the Examiner further asserted that the elongation, modulus of elasticity and glass transition temperature of the claimed elastomer are physical properties of epoxy and would therefore be inherent in the adhesive used by Guyette. Applicant, however, respectfully disagrees with Examiner's assertions.

Epoxy materials typically do not have elastomeric properties and thus, one of ordinary skill in the art would not think of or use an epoxy as an elastomer. While epoxy materials can be engineered to have the elongation, modulus of elasticity and glass transition temperature of the claimed elastomer, such epoxy materials are not commercially available, and must be specially manufactured. Accordingly, an elastomer having an elongation between about 20% and 1200%, a modulus of elasticity at 100% elongation of between about 10 and 10,000 psi, and a glass transition temperature between -90 and 50°C would not be inherent in the adhesives used by Guyette.

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Moreover, there is no suggestion in Guyette of the unique combination of features claimed in the present application, which includes limitations directed to the specific embodiments of the stress-relieving elastomer. Therefore, Applicant respectfully requests that any rejection relating to these claimed properties be withdrawn.

Guyette Teaches Away From Adding An Elastomer To Laminate Structures

Guyette teaches away from using a specially selected polymer having elastomeric properties. The adhesives suggested by Guyette are made from materials that are typically good for and known as creating a rigid bond; those adhesives are not commercially available as elastomers. While epoxy adhesives could be manufactured as an elastomer, Guyette provides no suggestion that the disclosed epoxy should be engineered to have the claimed elastomeric properties. Indeed, Guyette discloses only that commercially available adhesives should be used between the top surface 12 and the core 11. (see Guyette at 6:15-20; *Id.* at 6:66-68.) The reason is simple. Guyette was not concerned with allowing relative movement between two layers. Rather Guyette was only interested in creating a unitary structure having a permanent rock-like bond using a one step process. (see Guyette at 7:22-24.) The optional adhesive disclosed in Guyette only serves to improve and solidify that rock-like bond. (see Guyette at 4:14-19 (“... such an adhesive may also be present . . . in order to improve the adhesion of said kraft paper sheet 30 or . . . the intermediate sheet 41 to the fiber cementboard surface 12.”).) Accordingly, one of ordinary skill in the art at the time of the invention would not have found the claimed invention obvious in view of the Guyette reference.

Claims 14-16 Are Not Product-by-Process Claims

The Examiner has asserted that Claims 14-16 are product-by-process claims. Applicant respectfully disagrees with Examiner’s assessment of the limitations in those claims because the test conditions define material properties of the elastomer by which delamination are measured. For instance, the elastomer in Claim 16 must be selected from a range of materials that prevents delamination when the laminate structure is incubated at a temperature of about 60°C for not less than three days. Therefore, the unique combination of features in Claims 14-16, including the limitations discussed above, are patentable. In light of the foregoing, Applicant respectfully requests that these rejections be withdrawn.

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New Claims

Applicant has added new Claims 17-21. For many of the same reasons as discussed above, and because these claims recite features not taught or suggested by the cited reference, Applicant submits that these claims are in condition for allowance.

CONCLUSION

In view of the amendments and the foregoing remarks, Applicant submits that this application, as amended, is in condition for allowance and such action is respectfully requested. If any issues remain or require further clarification, the Examiner is respectfully requested to call Applicant's counsel at the number indicated below in order to resolve such issues promptly. Also, if there are any additional fees, including any fees for additional extension of time, or credit overpayment, please charge it to Deposit Account No. 11-1410.

Respectfully submitted,

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